

U.S. Department of Commerce, Patent and Trademark Office						Atty Docket No.		Serial No.	
						M-9455 US		Unknown	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT						Applicants			
(Use several sheets if necessary)						Holden, et al.			
						Filing Date			
						Herewith		Group	
								Unknown	

U.S. Patent Documents							
*Examiner Initial	Document Number	Date	Name	Class	Subclass	Filing Date If Appropriate	
	AA	RE 34,783	11/8/94	Coates	250	372	_____
	AB	4,672,196	6/9/87	Canino	250	225	_____
	AC	5,045,704	9/3/91	Coates	250	372	_____
	AD	5,607,800	3/4/97	Ziger	430	8	_____
	AE	5,739,909	4/14/98	Blayo et al.	356	369	_____
	AF	5,747,813	5/5/98	Norton et al.	250	372	_____
	AG	5,841,139	11/24/98	Sostek et al.	250	339	_____
	AH						
	AI						
	AJ						
	AK						

Foreign Patent Documents								
							Translation	
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	AL	WO 99/45340	9/10/99	PCT	G01B	11/02	X	
	AM	JP 11211421	8/6/99	Japan	G01B	11/02	Abstract X	
	AN	JP 11211422	8/6/99	Japan	G01B	11/02	Abstract X	
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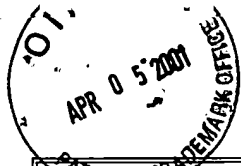
  

OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)		
	AQ	Corle, et al., "Polarization-enhanced imaging of photoresist gratings in the real-time scanning optical microscope", Applied Optics, Vol. 33, No. 4, pages 670-677 (February 1, 1994).
	AR	Hauge, "Recent Developments in Instrumentation in Ellipsoetry", Surface Science 96, pages 108-140 (1980).
	AS	

Examiner	Date Considered Feb 14, 2002
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#3. Sheet 1 of 2

U.S. Department of Commerce, Patent and Trademark Office	Atty Docket No.	Serial No.
RECEIVED APR -9 2001 TC 2800 MAIL ROOM	M-9455 US	09/670,000
INFORMATION DISCLOSURE STATEMENT BY APPLICANT		Applicants
(Use several sheets if necessary)		James M. Holden et al.
Filing Date		Group
September 25, 2000		Unknown

## U.S. Patent Documents

*Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date If Appropriate
<input checked="" type="checkbox"/>	AA	4,141,780	Feb. 27, 1979	Kleinknecht et al.	156	626	_____
<input checked="" type="checkbox"/>	AB	4,172,664	Oct. 30, 1979	Charsky et al.	356	356	_____
<input checked="" type="checkbox"/>	AC	4,408,884	Oct. 11, 1983	Kleinknecht et al.	356	355	_____
<input checked="" type="checkbox"/>	AD	4,593,368	Jun. 3, 1986	Fridge et al.	364	525	_____
<input checked="" type="checkbox"/>	AE	4,707,610	Nov. 17, 1987	Lindow et al.	250	560	_____
<input checked="" type="checkbox"/>	AF	4,748,335	May 31, 1988	Lindow et al.	250	572	_____

## Foreign Patent Documents

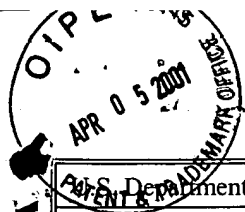
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<input checked="" type="checkbox"/>	✓	AG	EP 1 037 012 A1	9/20/00	Europe	_____		✗
<input checked="" type="checkbox"/>	✓	AH	EP 0 402 191 A1	12/12/90	Europe	_____	Claims	✗

## OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)

<input checked="" type="checkbox"/>	✓	AI	Davidson, M. et al., "A comparison between rigorous light scattering methods", <i>SPIE</i> Vol. 3051 (1997) Pages 606-619.
<input checked="" type="checkbox"/>	✓	AJ	Galarza, C. et al., "Real-time Estimation of Patterned Wafer Parameters Using <i>In Situ</i> Spectroscopic Ellipsometry", <i>Proceedings of the IEEE</i> (1999) Pages 773-778.
<input checked="" type="checkbox"/>	✓	AK	Haverlag, M. et al., "In situ ellipsometry and reflectometry during etching of patterned surfaces: Experiments and simulations", <i>Journal of Vacuum Science &amp; Technology B</i> , Volume 10 (1992) Pages 2412-2418.
<input checked="" type="checkbox"/>	✓	AL	Heimann, P. et al., "Optical Etch-Rate Monitoring: Computer Simulation of Reflectance", <i>Electrochemical Society Active Member</i> , Volume 131 (1984) Pages 881-885.
<input checked="" type="checkbox"/>	✓	AM	Krukar, R. et al., "Reactive ion etching profile and depth characterization using statistical and neural network analysis of light scattering data", <i>J. Appl. Phys.</i> , Vol. 74 (1993) Pages 3698-3706.
<input checked="" type="checkbox"/>	✓	AN	Lee, M. et al., "Analysis of Reflectometry and Ellipsometry Data from Patterned Structures", <i>Characterization and Metrology for ULSI Technology</i> , (1998) Pages 331-334.
<input checked="" type="checkbox"/>	✓	AO	Marx, D. et al., "Polarization quadrature measurement of subwavelength diffracting structures", <i>Applied Optics</i> , Vol. 36 (1997), Pages 6434-6440.

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#3

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		September 25, 2000	Unknown

## U.S. Patent Documents

*Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date If Appropriate
<input checked="" type="checkbox"/>	AA	5,042,949	Aug. 27, 1991	Greenberg et al.	356	345	_____
<input type="checkbox"/>	AB	5,164,790	Nov. 17, 1992	McNeil et al.	356	355	_____
<input type="checkbox"/>	AC	5,363,171	Nov. 8, 1994	Mack	355	68	_____
<input type="checkbox"/>	AD	5,739,909	Apr. 14, 1998	Blayo et al.	356	369	_____
<input checked="" type="checkbox"/>	AE	5,963,329	Oct. 5, 1999	Conrad et al.	356	372	_____
<input type="checkbox"/>	AF						

## Foreign Patent Documents

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<input checked="" type="checkbox"/>	✓	AG	EP 0 601 580 A1	6/15/94	Europe	_____		<input checked="" type="checkbox"/>
<input type="checkbox"/>		AH						

## OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)

<input checked="" type="checkbox"/>	✓	AI	Mills, D. et al., "Spectral ellipsometry on patterned wafers," <i>SPIE</i> , Vol. 2637 (1995) Pages 194-203.
<input type="checkbox"/>	✓	AJ	Moharam, M. et al., "Diffraction analysis of dielectric surface-relief gratings", <i>J. Opt. Soc. Am.</i> , Vol. 72 (1982) Pages 1385-1392.
<input type="checkbox"/>	✓	AK	Moharam, M. et al., "Formulation for stable and efficient implementation of the rigorous coupled-wave analysis of binary gratings", <i>J. Opt. Soc. Am.</i> , Vol. 12 (1995) Pages 1068-1076.
<input type="checkbox"/>	✓	AL	Moharam, M. et al., "Rigorous coupled-wave analysis of planar-grating diffraction", <i>J. Opt. Soc. Am.</i> , Vol. 71 (1981) Pages 811-818.
<input type="checkbox"/>	✓	AM	Moharam, M. et al., "Stable implementation of the rigorous coupled-wave analysis for surface-relief gratings: enhanced transmittance matrix approach", <i>J. Opt. Soc. Am.</i> , Vol. 12 (1995) Pages 1077-1086.
<input type="checkbox"/>	✓	AN	Naqvi, S. et al., "Linewidth measurement of gratings on photomasks: a simple technique", <i>Applied Optics</i> , Vol. 31 (1992) Pages 1377-1384.
<input checked="" type="checkbox"/>	✓	AO	Ziger, D. et al., "Linesize effects on ultraviolet reflectance spectra"

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U.S. Patent Documents

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<input checked="" type="checkbox"/>	AA	4,582,389	Apr. 15, 1986	Wood et al.	350	3.69	—
<input checked="" type="checkbox"/>	AB	5,007,708	Apr. 16, 1991	Gaylord et al.	350	162.2	—
<input checked="" type="checkbox"/>	AC	5,035,770	Jul. 30, 1991	Braun	156	643	—
<input checked="" type="checkbox"/>	AD	5,191,216	Mar. 2, 1993	Henderson et al.	257	28	—
<input checked="" type="checkbox"/>	AE	5,216,680	Jun. 1, 1993	Magnusson et al.	372	20	—
<input checked="" type="checkbox"/>	AF	5,337,146	Aug. 9, 1994	Azzam	356	367	—
<input checked="" type="checkbox"/>	AG	5,349,440	Sep. 20, 1994	DeGroot	356	349	—

Foreign Patent Documents

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<input checked="" type="checkbox"/>	AH	59-225038	Dec. 18, 1984	Japan	—	—	Abstract	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	AI	SU 1747877 A1	Jul. 15, 1992	SU	—	—	Abstract	<input checked="" type="checkbox"/>
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OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)

<input checked="" type="checkbox"/>	AM	Bao, G. et al., "Mathematical studies in rigorous grating theory", <i>J. Opt. Soc. Am. A</i> , Vol. 12 (1995), Pages 1029-1042.
<input checked="" type="checkbox"/>	AN	Bao, G. et al., "Modeling and Optimal Design of Diffractive Optical Structures", Pages 1-27.
<input checked="" type="checkbox"/>	AO	Benson, T. et al., " <i>In-situ</i> Spectroscopic Reflectometry for Polycrystalline Silicon Thin Film Etch Rate Determination During Reactive Ion Etching", Pages 1-34.
<input checked="" type="checkbox"/>	AP	Bosenberg, W. et al., "Linewidth Measurement on IC Wafers by Diffraction from Grating Test Patterns", <i>Solid State Technology</i> (1983) Pages 79-85.
<input checked="" type="checkbox"/>	AQ	Chateau, N. et al., "Algorithm for the rigorous coupled-wave analysis of grating diffraction," <i>J. Opt. Soc. Am. A</i> , Vol. 11 (1994), Pages 1321-1331.

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	AH							
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OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)		
✗	AM	Coulombe, S. et al., "Ellipsometric-Scatterometry for sub-01. $\mu$ m CD measurements" <i>SPIE</i> Vol. 3332 (1988) Pages 282-292.
✓	AN	Damar, H. et al., "Diffraction Characterization for Process Monitoring, Linewidth Measurement and Alignment" <i>SPIE</i> Vol. 470 (1984) Pages 157-163.
✓	AO	Gaylord, T. et al., "Analysis and Applications of Optical Diffraction by Gratings," <i>Proceedings of the IEEE</i> , Vol. 73, (1984), Pages 894-937 (1985).
✓	AP	Giapis, K. et al., "Use of Light Scattering in Characterizing Reactively Ion Etched Profiles", <i>J. Vac. Sci. Technol. A</i> , Vol. 9 (1981), Pages 664-668.
✗	AQ	Glytsis, E. et al., "Rigorous Coupled-Wave Analysis And Applications Of Grating Diffraction", <i>Critical Reviews Of Optical Science and Technology</i> , Vol. CR49 (1993), Pages 1-31.

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OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)		
✓	AM	Glytsis, E. et al., "Three-dimensional (vector) rigorous coupled-wave analysis of anisotropic grating diffraction", <i>J. Opt. Soc. Am. A</i> , Vol. 7 (1990), Pages 1399-1420.
✓	AN	Kleinknecht, H. et al., "Linewidth measurement on IC masks and wafers by grating test patterns", <i>Applied Optics</i> , Vol. 19 (1980) Pages 525-533.
✓	AO	Kong, W. et al., "Analysis of Time-Evolved Spectroscopic Ellipsometry Data from Patterned Structures for Etching Process Monitoring and Control", Four pages.
✓	AP	Moharam, M., "Coupled-Wave Analysis of Two-Dimensional Dielectric Gratings", <i>SPIE</i> Vol. 883 (1988) Pages 8-11.
✓	AQ	Moharam, M. et al., "Three-dimensional vector coupled-wave analysis of planar-grating diffraction", <i>J. Opt. Soc. Am.</i> , Vol. 73 (1983), Pages 1105-1112.

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Applicants

James M. Holden et al.

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U.S. Patent Documents

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Foreign Patent Documents

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OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)

AM	Press, W. et al., "Numerical Recipes: The Art of Scientific Computing," Cambridge University Press, Section 14.4 (1986), Pages 521-528.
AN	Tadros, K., "Understanding metrology of polysilicon gates through reflectance measurement and simulation", SPIE Vol. 1464 (1991) Pages 177-186.
AO	Tu, K. et al., "Multiple-scattering theory of wave diffraction by superposed volume gratings", J. Opt. Soc. Am. A., Vol. 7 (1990), Pages 1421-1435.
AP	"A Diffraction Grating Analysis Tool", downloaded 5/7/2001 from <http://www.gsolver.com/gsprod.html>, Grating Solve Development Co. (1999).
AQ	

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(Use several sheets if necessary)		James M. Holden et al.	
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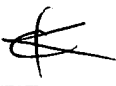
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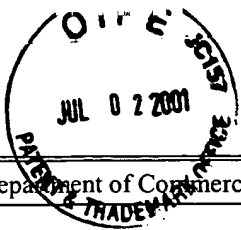
OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)

	AQ	Brauer, R. et al., "Electromagnetic diffraction analysis of two-dimensional gratings", <i>Elsevier Science Publishers</i> (1993) Pages 1-5.
	AR	Han, S. et al., "Electromagnetic scattering of two-dimensional surface-relief dielectric grating", <i>Applied Optics</i> , Vol. 31 (1992) Pages 2343-2352.
	AS	

Examiner 	Date Considered 2/14/02
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	September 25, 2000	Unknown

## U.S. Patent Documents

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<i>K</i>	AA	6,031,614	Feb. 29, 2000	Michaelis et al.	356	369	<u>                    </u>
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## Foreign Patent Documents

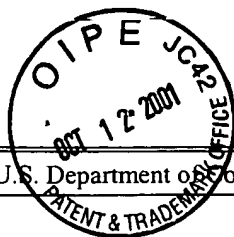
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Sheet 1 of 1

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## Foreign Patent Documents

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## OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)

	AQ	Huang, H. et al., "Normal-incidence spectroscopic ellipsometry for critical dimension monitoring", <i>Applied Physics Letters</i> , Vol. 78 (2001) Pages 3983-3985.
	AR	Sun, J. et al., "Profile Measurement on IC Wafers by Holographic Interference", <i>SPIE</i> Vol. 673 (1986) Pages 135-143.
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

  

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
  

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OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)		
	AQ	Krukar, R. et al., "Overlay and Grating Line Shape Metrology Using Optical Scatterometry (unclassified) DARPA I 1993 Final Report.
	AR	McNeill, J. et al., "Scatterometry Applied to Microelectronics Processing" <i>Microolithography World</i> (1992) Pages 16-22.
	AS	

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